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COUNTRY LIFE EDUCATION.[1]

As each hour has its duties and each tilting of the world's axis has its seasonable work, so each decade brings up for solution its own problems. Our country has taken up one after another such political questions as self-government, freedom of speech, the freeing of a race of slaves, and the curbing of dominating capital. In education the first forward movement was to secure private schools, then came the movement for free primary schools. The establishment of academies and colleges followed, to be in turn succeeded by a movement to establish free city high schools and normal schools; also State colleges and universities partly or quite free of tuition charges. Each of these types of schools has been devised to form a wheel in the educational machinery which we, as a people, are gradually perfecting.

The educational philosophy of the older church-governed schools which long ruled our educational policy has been powerfully modified by research in the sciences and by development in the industries, arts, and professions. The curriculum once confined to classical learning has broadened out so as to cover the practical as well as the theoretical and the æsthetic. Some of our very best philosophy of education is now found in the minds of those teachers who are successfully reducing to pedagogic form and weaving into our educational scheme the essentials of education in the industries and home making. When the older philosophy met the problems of technical education it said: "Educate the man first and the specialist afterwards." Its plan was to give the man a general college course and give him his technical work in a graduate course. That plan limited technical education to college men. It was aristocracy of education for the few in the professions. If that philosophy had been persisted in, it would have been the most un-American of foibles. The persistency with which this mistaken policy was pursued was due almost wholly to the fact that school teachers cling most tenaciously to the educational philosophy of the schools where they were taught. Among the most intolerant things done in American life stands out the persistency with which our educators go into a new community and disregard the local interests important and dear to the parents and pupils, placing the school emphasis too nearly all on the remote, as on the possibilities of becoming President, or on the language of a people who knew far less than we, failing to give the youth information about the things with which he or she must deal. But far worse, this course tends actually to rob the pupil of his or her inspiration for the practical affairs of the home, the farm, the shop, or other work in which at least 90 per cent must engage.

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[1] Address of W. M. Hays, Assistant Secretary of Agriculture, before the Pennsylvania State Board of Agriculture, January 23, 1907.

The broader plans coming into our schools have been largely thrust upon the school men by men of affairs, as in our cities and by legislators. The success of combining industrial, technical, and scientific studies with the general studies, thus brought about, often under suggestions from school men, shows that the philosophy of many of the older educators was wrong. The Congress of the United States, by passing the land-grant act of 1862 establishing State colleges of agriculture and the mechanic arts, did more than all other agencies to broaden the philosophy adhered to by the older schools. At first the mechanic arts were brought to a pedagogic basis; then agriculture slowly but surely was brought to teachable form; and last, home economics were successfully brought into the domain of the school. I believe there are now no administrators of these colleges who are so conservative as not to be thoroughly in sympathy with collegiate education in engineering; most of them have risen to a belief that agriculture has been reduced to teachable form; but some still have little faith in the possibility of teaching domestic subjects. Legislative bodies, ever more ready than teachers to turn our schools into practical lines, have their minds open to larger plans for public education. These men who see the broader economic and social movements of our country and our States have come to believe profoundly in scientific, technical, and industrial education and research in relation to our productive industries, in relation to home making, and in relation to our social and civic life. As the management of a great railway system is willing to make expensive surveys preparatory to the proper construction at not too great cost of proposed improvements in order that larger net profits may accrue to the road, so our legislators are ready to have the people's money collected and expended in making the people more efficient in creating and enjoying wealth.

The new school movement springing out of the Congressional land-grant act of 1862 offers some facts of interest to legislators and to all who are interested in our youth. These colleges,[1] with 12,334 students in engineering courses, 7,272 in agriculture, and 854 in home economics, most of whom are competing for collegiate degrees, can not offer their training in political studies to more than a very small number of the 26,000,000 school children in the country. All will agree that inquiries should be made concerning the best way to supplement these colleges, so as to carry this education down through all schools, and to carry instruction and inspiration in all practical lines of effort to all our youth. As an outgrowth of the engineering departments of these State colleges, instruction in mechanic arts has been very successfully introduced into numerous city high schools of the country. Evidence of the utility of the mechanic arts city high school is arising from the effect it is having on the mechanical industries. Manufacturing firms, for example, are seeking in these schools the young men and young women who show an aptitude for expert work, a genius for invention and new construction, an instinct for managing men, or abilities for promoting and conserving financial affairs. As a result of the agricultural work of State colleges, more than thirty of the needed two or three hundred agricultural high schools have been organized by the different States, two having established one such school in each Congressional district. Home economic education, first organized in agricultural colleges, is rapidly spreading into all city high schools, agricultural high schools, as well as privately endowed schools of secondary and higher grade, and even into primary schools. In towns and cities too small to establish separate mechanic arts schools, more or less mechanical and home economics instruction is introduced, often as elective subjects, in the regular high-school courses of instruction.

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[1] Figures of white pupils only available. Colored schools relating to the industries are mainly of secondary grade.

The little rural school, so long the most backward in catching step with modern progress, is beginning to take new form. Education in agriculture and home economics, once it is fairly started toward all farm boys and girls, promises to be too strong for the conservatism of even the isolated rural school, which has amply demonstrated that in its present form it can not properly handle these two new lines of work. It has been shown that the rural school needs to be born over into a new life which will fit it for its part—a most important part in the evolution of modern agriculture and modern country home making. The one-room school must become the four-room consolidated school, so that a man trained to teach agriculture and a woman trained to teach home economics may here find that fair wage and that long tenure of office which will warrant them in thoroughly preparing for their important tasks. The faculty of four or five teachers can conduct a ten-year course extending through the eight primary school years and two years of the high school for the 150 children from as many farms in an area of 25 square miles. The cottage of the principal; the plantations of timber, fruit, vegetable and ornamental plants; the plats for field crops, fertilizer demonstrations, and farm-management lessons; the laboratory and practice room; and the vital connection the teachers can have by cooperating with parents in the work on the farms and in the homes will serve to weave into the pupils' nature the elements of a true education in country life. With the schools thus organized there is provided in the country a far broader child life than has yet been conceived for city youth. How can the nation better expend some of its wealth than by thus making provision for well-nigh ideal conditions of fatherhood and motherhood in our country homes? Two hundred of the needed 40,000 consolidated rural schools have been established, and practical studies in agriculture and home economics are slowly but surely finding their place in them.

Education in the city industries, in agriculture, and in home economics having become successful elements in our public education, it is not too early to inquire how they may best be brought freely to all American youth. No one can doubt that the introduction of these subjects generally into secondary and primary schools will materially increase the cost of our public schools, nor that this added cost will several times over return in the greater earnings and in the better homes of the coming generation. Those who have most closely investigated the subject believe that the general adoption of industrial education is in the same category as was the adoption of the steam engine, the self-binder, and the sewing machine. The vast expenditures of these mechanical inventions would have seemed more appalling fifty years ago than would now the added cost of industrial education. Our scheme of education for city life is rapidly taking form for the nonagricultural classes in our tripartite system of primary, secondary, and higher schools. The great bulk of this work provided for by public taxation is organized under an articulated system of eight years of primary, four years of secondary or high school, and four years of collegiate work, with one or more added years for graduate courses. The privately endowed schools of primary and secondary grade are no longer rapidly increasing their numbers nor their income, though their value is and will continue to be only second to that of the rising public-school system. Persons with private funds to give to good causes are more and more recognizing that public funds are to carry the main burden of primary and secondary schools. Even the colleges and universities of nonpublic character are meeting most powerful rivalry from State colleges and State universities.

The city youth early gains a position on the educational ladder, and with the hope and enthusiasm of youth he looks and climbs upward. The system ever leads him on as if all could find occupation at the top. But necessity to labor for sustenance, as well as other causes, compels or induces 98.6 out of a hundred[1] to stop short of the college ladder, and 94 out of a hundred to stop before leaving the primary ladder and to labor in the fields, shops, and homes. Higher education is very important; secondary education even more important; but the great work of the schools must be done in the primary schools. The main function of our secondary and higher schools is clearly to prepare teachers for the primary schools.

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[1] From statistics of attendance in private and public schools and colleges throughout the United States in the 1904 Report of the United States Commissioner of Education.

The city-life system of education will prepare those who are to continue on their educational course none the less well if the lower schools devote a fair amount of their time to education relating to the sustaining industries. And there will be a far better self-selection of those who are to continue in school, that they may prepare for the pulpit, for the bar, for the teacher's chair, or for the engineer's or technician's post. The wider experience of the pupil who tests his own powers and interests with the natural, industrial, and home-making objects and subjects will enable him earlier to find himself; so that fewer mistakes in choice of a life vocation may be made.

When all our city secondary schools freely offer to all pupils a training in the mechanical industries and in home economics, teachers will be trained who know the educational values of these subjects from the standpoints of scholarship, mental power, industrial skill, and broad, practical citizenship, and who can successfully introduce these subjects in an elementary way in the higher grades of all our city and town primary schools. Clearly there is need, in the curriculum and plan of our city high schools, for instruction in practical subjects, that those who are to be teachers of our lower schools may have knowledge, interest, and inspiration regarding these broad fields of industrial and household work with which most of the people throughout their lives must daily deal, and that very many leaders with higher standards of skill and efficiency may be provided for all our industrial and home-making work. Laborers trained in their work, however simple; artisans skilled in their expert labor; technicians schooled and specialized in their duties; foremen, managers, and heads of manufacturing, transportation, and commercial enterprises made alert to see the interrelations of industrial processes—the web and woof of our great nonagricultural industries—will make splendid use of a far more highly developed practical school training than our country now provides them.

Country-life education has not had the advantages of centralized population and wealth. It has not developed the needed leaders. Its problems have been more difficult; its organization has been more slow. While the State colleges of agriculture and mechanic arts were designed by Congress to keep agriculture and our splendid country life at the front, some of these institutions failed for a quarter of a century and more to make a success of their agricultural instruction. Many causes operated to retard the successful development of collegiate courses in agriculture. General education requiring only class rooms, chairs, blackboards, and books, and scientific education requiring in addition only laboratories, became first installed in many of the institutions and long held the chief place in the minds of college presidents and boards of trustees. Entering vigorously upon agricultural education necessitated the additional expenditures for practice laboratories and practical work on the farm, and for expensive herds of live stock and for other costly equipment. The collegiate faculty, most of whom were educated in older schools, could not resist the temptation to enter a race for large numbers of students with general colleges, thus hoping to gain favor with legislatures, and most of the funds were used for studies which could easiest be made popular: Following the ideals of the older educators, the technical and practical studies in agriculture were at first put toward the top of the collegiate courses. The assumption is now proved erroneous that the farmer should be afforded as long a course of college study as persons preparing for the technical professions. At first there were not so many positions open to the trained agriculturist as to the graduate of the general and scientific courses, which became popular as preparatory collegiate courses for those desiring to take their graduate work in law, medicine, or other profession. Lack of a substantial body of agricultural knowledge and business principles in pedagogic form was also at first a very great hindrance to the development of education in agriculture.

The engineering courses of these colleges, on the other hand, had less to handicap them. In the various lines of engineering a definite body of knowledge and practice work was early brought together in splendid form for teaching. The rapid growth of industrial, transportation, and merchandising enterprises afforded large numbers of salaried positions, paying even better than positions to which the general and scientific collegiate courses led. Students, seeing the halting and unsatisfactory character of instruction in agriculture, naturally flocked to the courses of study which seemed to give them individually the best opening. Presidents and boards of trustees, traveling the lines of least resistance, responded to the development of general and mechanic arts courses and failed to secure from the legislatures the large necessary equipment for agricultural education.

During the last one or two decades one State college after another has succeeded in bringing forward its agricultural instruction, and to-day success has been reached in a large proportion of these institutions, giving assurance that this class of collegiate education has a grand future.

Success had hardly been attained in collegiate courses in agriculture when secondary schools for agricultural education began successfully to develop. In 1888 the University of Minnesota began an experiment at developing an agricultural high-school course. This experiment is of none the less value and of all the greater interest because it was an outgrowth of the failure of agricultural courses of collegiate grade to gain a foothold in a State university. Just as Congress by its land-grant act forced colleges of agriculture upon the State, this agricultural high-school movement was injected into the school system upon the initiative of farmers and business men. At present between thirty and forty agricultural high schools have been established in the United States.

In one line of country-life education school men and nonschool men have together taken up the practical in school work. Farmers and educators together have entered upon the development of rural schools so as to have them cover agriculture and home economics as well as the Three R's. Thus the school people are especially championing the consolidation of rural schools, and the farmers are laying stress upon the introduction of agriculture into all rural schools. Both classes are rapidly coming to favor both propositions. The farmers are coming to see that agriculture can not be successfully introduced into the one-room rural schools, and the teachers are coming to see that agriculture and home economics are to have very strong positions in the primary country-school curriculum alongside the Three R's.

The need of a unified system of agricultural education with rural schools, agricultural high schools, and colleges of agriculture, articulated throughout as are the three classes of primary, secondary, and collegiate schools devoted to the education of the city or nonagricultural classes, is gaining wide recognition. Courses of study for agriculture and for home economics covering the sixteen years of primary, secondary, and collegiate work have been designed, demonstrating that a unified system of education can be built up for country people and for the professional or technical classes needed in building up the rural industries. To develop country-life education as instruction for our city people is developed, two important changes are necessary. First, there is needed in every rural Congressional district an agricultural high school with capacity to accommodate several hundred students, and, second, rural schools should be consolidated. In these two points unanimity of opinion is being slowly but surely reached by those who have paid most attention to this subject; and the next large public expenditure for education made by the American people should be for the consolidation of our rural schools, the development of agricultural high schools, and the development of industrial work in our country-life and in our city-life schools.

It is easy to believe that if a way appeared whereby the necessary funds could be provided, all would agree to these important developmental changes. Our farmers say that they can not afford the expense of discarding the little rural schools and erecting fine central schoolhouses, and assume the additional annual expense of hauling their children to and from the consolidated school. Our States even in these prosperous times feel conservative in appropriating the money to equip each of several agricultural high schools and the money necessary for the current expense fund of each such school. Our cities and towns during the period when their development expenditures for streets, sewers, waterworks, and general school buildings are large, do not feel that they can add to their budgets large items to equip and maintain instruction in mechanic arts and home economics. The States and cities argue that even if free industrial education would pay the community, its cost is more than their present financial ability will warrant.

Investigations to discover how best to finance movements to improve the condition of our farmers, our city workers, and our home makers have led to the discovery of a fact worthy of most serious consideration. In its early days, the country being small and jeopardized by external foes, the General Government received the right to levy indirect taxes, as on imports, on alcohol, and on tobacco. The States and lesser political divisions, on the other hand, raise their revenues by more direct taxation, as on personal property, on incomes of corporations and of individuals, and on inheritances.

It so happens that since the Federal Government and the State were allowed these sources of income vast economic changes have taken place, placing the Federal Government greatly at an advantage as compared with all the States combined in securing taxes. With the enormous development of manufactured products and the increased power of the people to purchase them, and with the greatly cheapened transportation resulting from the circulation of vastly greater quantities of commodities, the revenues obtained by the Federal Government have enormously increased. The States, on the other hand, find it impracticable to secure such large amounts of public revenue from the more direct forms of taxation. This is clearly illustrated by the fact that the Federal Government thus secures in taxes revenues amounting annually to $800,000,000. This is $10 per capita, or nearly $50 per family. The States, on the other hand, annually bring into their State treasuries only $2 to $3 per capita, or about $200,000,000. It should be observed that revenues derived by cities, counties, townships, and other political bodies make the State and local taxes presumably somewhat larger than the Federal revenue. The fact that the State legislator is often chosen under pledge to keep down State expenses, while the Federal legislator is expected to secure all he can get for his State from Federal appropriations, has not a little to do with the relatively larger growth of the Federal budget.

It may be of interest to note that this centralization of revenue in the hands of the General Government is a great force in centralizing governmental power, and if the people had less education or lived in a time less democratic this vast sum secured from indirect taxation might be a fatal danger. On the other hand, modern conditions require immense strength and resources at the command of political administrations which every four years must depend for their power upon the vote of the entire people. Not only the outside forces with which our Government might come into conflict, but the vast centers of financial and political influence within the country are gaining such mammoth proportions that the people as a whole agree that a strong government is required, that it be more powerful than any rival, external or internal.

The productive industries of the country yearly provide the $800,000,000 which goes into the Federal Treasury. If the workers were better prepared for their tasks, they could easier provide still larger public funds. Since States, cities, and counties and smaller school districts are handicapped by direct and less popular methods of taxation in securing school funds with which to pay for the expensive work of providing education in the industries, it would seem legitimate to use a small part of the National budget for that purpose. Congress has thoroughly established precedent along this line by passing the agricultural-college land-grant act of 1862, followed in 1890 with a direct appropriation of $25,000 to each State for education relating to the industries in the State colleges—thus by gift forced on the people.

It has been proposed that Congress offer to each rural Congressional district $10,000 annually toward the support of an agricultural high school. In 1887 Congress gave to each State $15,000 for agricultural experiment work, and in 1906 this amount was made $30,000 for each State. It has recently been proposed that $2,500 be offered by the Federal Government toward the support of a branch experiment station at each Congressional district agricultural high school.

It seems only proper to carry the suggestion one step further and suggest that Government aid be extended also to industrial education in mechanic arts and home economics in the city and town high schools. A law has been suggested by Representative Davis, under which, say, 10 cents per capita, or a total of $8,000,000 annually, might be apportioned to agricultural high schools and to city high schools. The payment of this fund from the Federal Treasury could be conditioned on the State supplying the necessary lands, buildings, and equipment, and on the appropriation by the respective States of sums equal to their allotment from the General Government. The law could be made to stipulate that the Federal fund be used only for actual work in classes devoted to the industries and domestic work.

That some comprehensive scheme of financing industrial education is necessary can hardly be doubted by those acquainted with those communities most backward from an industrial standpoint, as in the South and West, and in thinly settled districts, as in mountainous regions.

Even Pennsylvania would receive an impulse of vast importance from a measure of this kind. Such action on the part of the Federal Government would be of untold benefit to the country people of this State. Her manufactures also would gain a new impetus from thus inaugurating throughout her high-school system mechanic arts education. Education in home economics thus made possible to every girl in the State would still further exalt home making and motherhood in the Keystone State.

Taking round numbers from the Twelfth Census, Pennsylvania stands among the States second in manufactures only to New York. In agriculture she stands eighth. She has a total output of $1,834,000,000 in the mechanical industries and $207,000,000 in agriculture, practically four to one. She had 928,000 workers in mechanical industries and 341,000 in agriculture, practically three to one. In trade and transportation she had 454,000 workers; in professional service, 103,000; and in domestic and personal service, 566,000. Of her 6,302,000 people, there were of school age 2,031,000, or practically one in every three, half of which number, 1,084,000, were in school.

The figures are not available to show the school expenditure for the five classes respectively. It is conservative to estimate that the 103,000 professional workers have had school facilities from public funds and from private endowments equal to those provided to several times as many workers in the industries. Educators are rightfully urging that more money be supplied to equip the colleges and universities which devote their energies mainly to educating people for the professions. Indirectly, by training teachers for the lower schools, these higher institutions of learning have a very large influence in educating the workers. Colleges and universities have had their great day of promotion, and they have reached a point where their very substantial equipment and liberal support are assured. The professional class is about 5 per cent of the whole number of workers. In education they appear as a privileged class. They should not be given less, but more; but the great movement now needed is to give of the world's rapidly accumulating store of technical knowledge to the workers and to add to this knowledge skill. There is now no line of practical work for which a technique is not being rapidly developed. In agriculture, in the mechanical industries, and in home economics the body of accumulating scientific, artisan, and art knowledge is being reduced to pedagogical form. Studies in this great triumvirate of practical affairs (mechanic arts, agriculture, and domestic economy) are forcing in beside the Three R's, and the resulting sextette will so broaden out the knowledge, the industrial skill, and the productive and home-making efficiency of the whole people that every class will have a richer world to live in.

Pennsylvania has about one-fourth of her industrial workers engaged in agricultural pursuits, with three-fourths in manufacturing and mechanical pursuits and in transportation. If Pennsylvania were provided with a fund from the Federal Treasury equal to 10 cents per capita of the entire population, and part of it were put into technical education in agricultural high schools and part into technical education in city schools, and the State were required to expend an equal amount along these lines, the evolution of agriculture and of mechanical trades and industries would be rapid, and the results to Pennsylvania's income and civilization would be both extensive and profoundly beneficial.

Mechanic arts education thus extensively supported would result in much stronger leadership in the engineering professions and in the business management of Pennsylvania's industrial and transportation enterprises. Every boy in the State with strong instincts along any of these lines would then have the opportunity of the largest development of which his nature is capable. Ten agricultural high schools in the State, each provided with $15,000 from an outside source and $15,000 from the State, would send to the agricultural-college course at State College, splendidly prepared, all the men the State needs to train in collegiate courses for professional work in its agriculture, with a surplus for National service along this line.

These schools should graduate from high-school courses a thousand of the farm youth every year, or 35,000 every generation. Who will doubt that such a body of people trained in rural business and country home making would not push Pennsylvania agriculture to altitudes not yet dreamed of? Would such an army of people trained in country-life education stop short of a splendidly organized system of a thousand consolidated rural schools and as many well-developed single-room schools in isolated mountain districts? From this body of young people what a splendid corps of teachers could be provided to install country-life education in these rural schools.

Under this plan a city of 100,000 population would receive, say, $10,000, to which it would add an equal amount, to be used in studies in the mechanic arts and in the household industries. Thus the city schools of Pennsylvania would not only grade up the efficiency of the industrial workers and home makers, but would send to the mechanic arts collegiate courses in State College, or at the University of Pennsylvania and other colleges offering engineering courses, young men better self-selected and better trained to go forward in their preparation for the engineering professions. Even the other collegiate courses of these institutions would be benefited by having a better selection of youth to enter the collegiate, scientific, literary, theological, and related courses of study. Besides, our modern conditions require that the scientist, the writer, and the theologian know the practical sides of the lives of the people for whom they experiment, write, and preach.

With large public funds thus provided for the practical in education, the less expensive but hardly less important line of education in home economics would receive the impetus it so richly deserves. No one who has had an intimate acquaintance with the developments of this line of education during the past twenty years will doubt the assertion that 10 per cent of the large sums of money suggested for industrial education if applied to instruction in home economics in all the public secondary schools, as thus suggested for city and country, would easily bring back to the people more than the entire cost.

While Congress inaugurated industrial education; while Minnesota has the credit of designing a successful course of agricultural high-school work; while a number of our cities, as Philadelphia, Brooklyn, St. Paul, St. Louis, Chicago, and Menominee, have proven mechanic arts high schools to be practicable; while Ohio, Indiana, and other States have made practicable that most difficult of changes, the consolidation of the rural schools; and while Alabama has the credit of being first to locate an agricultural high school in each Congressional district, the great southern State of Georgia has the proud distinction of first proceeding to finance a system of agricultural high schools throughout the State. Last July the legislature of Georgia passed an act authorizing Governor Terrell to locate an agricultural high school in each of the eleven Congressional districts of the State, and turned over the funds reserved as tag taxes on fertilizers and oils for their use as an annual support fund. The act required the people of the respective districts to furnish farms, buildings, and equipments. Governor Terrell secured experts to aid in the selection of farms suitable for school and branch experiment-station work. He employed an architect to prepare a bird's-eye view of campus and buildings, and he called upon educators to aid in devising a course of study devoted especially to agriculture and home economics, and articulating with the rural schools below, and with the farm, at the same time leading toward the collegiate agricultural course in the University of Georgia.

The people of Georgia were thus so fully aroused to the importance of these schools that the bids of different cities and counties for them reached figures which put our rich Northern States in the shade. All but one of the eleven schools have been located, and what will be the bid of the last one is pretty well known. The total thus given, almost wholly by individual subscribers for the 200 or 300 acre farms, for buildings and equipments, amounts to over $800,000—more than $70,000 with which to equip each school.

Is it any wonder that this magnificent response by the people of Georgia to his appeal to thus use modern technical education to bring still higher her rising industries and home making led Governor Terrell to suggest to his Congressmen to secure a Federal grant for more money with which to supply these schools and for a branch experiment station at each school a more nearly adequate annual expense fund?

America has no State more able than Pennsylvania to take a strong pace in the development of industrial education. Building up a system of education in the city industries, in agriculture, and in home making will cost additional funds. But the expenditures to make more efficient the producers of wealth and the home makers who devote themselves largely to the development of people will pay back their cost several times over. Our statesmen and our educators have before them no more important problem than that of financing a plan of industrial education which is educationally correct. More experiments are needed that we may know how to develop industrial education. Of special importance are experiments to determine how best to organize education in agriculture and home economics in consolidated schools. Pennsylvania's law, passed several years ago, providing for the consolidation of rural schools, should furnish excellent conditions for such experiments. The rural school, being far the most important of all schools devoted to country life, should be studied by actual experiments. No other one subject in agriculture is so much in need of investigation. Possibly legislative bodies and men in practical affairs must here make the first move, as in the creation of agricultural colleges and as in financing agricultural high schools.

Recommended for publication.
A. C. TRUE, *Director*.

Publication authorized.
JAMES WILSON, *Secretary of Agriculture*.

WASHINGTON, D. C., *January 28, 1907*.

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